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10/021,112	12/12/2001	Richard H. Curtis	08556.0001	8948

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EXAMINER

BARTH, VINCENT P

ART UNIT PAPER NUMBER

2877

DATE MAILED: 09/25/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/021,112

Applicant(s)

CURTIS, RICHARD H.

Examiner

Vincent P. Barth

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 12 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-20, 23-31 and 35 is/are allowed.
- 6) ☒ Claim(s) 21, 22, 32-34 and 36 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.

- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 21, 22, 32-34 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
3. Referring to Claims 21, 22 and 32, the limitations set forth involve measuring at least one dimension of a well to an accuracy of “no more than” than either 0.1% or 0.5%. The common usage of the term “accurate” to a certain percentage, is used, for example, as follows: “The test is 99.9% accurate”. With this usage, a test which is 0.1% accurate, is 99.9% inaccurate. Thus, under this common usage, the claim language above would mean that the cuvette dimension measurements are not to exceed 0.5% accuracy, i.e. they must be 99.5% inaccurate or more. Those reading the claim language and the Specification would likely assume that this latter interpretation was not intended. Nevertheless, unless perhaps there is a mistake in the above discussion, the claims should be amended to reflect the true intentions of the inventor. For example, the measurements would be taken to an accuracy of “not less than 99.5%”, etc. However, the claims have been discussed below as each may best be understood.
4. Referring to Claims 32 and 33, an additional basis of rejection under § 112 2d paragraph has resulted from the claim language being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary

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structural connections. The omitted structural cooperative relationships are the formation of a link between the sample solutions and the separate blank solutions. See MPEP § 2172.01, and, In re Collier, 397 F.2d 1003, 158 U.S.P.Q. 266 at 267-268 (27 Jun., 1968). Stated in the alternative, the claim language merely recites a collection of elements, without describing how each functions with the other. Accordingly, the claim should either be cancelled or redrafted to include such functional relationships. However, the claims have been discussed below as each may best be understood.

5. Referring to Claim 34, the limitation is set forth that a gas is introduced into the cells for allowing expansion of the sample solution. However, the introduction of a gas, *per se*, is not explicitly set forth in the Specification. Accordingly, the claim is indefinite under §112, for lacking an antecedent basis for the feature. See MPEP §2173.05(e). However, the Specification does discuss the presence of, rather than the introduction of, air bubbles in the containers. Therefore, the claim has been discussed below as it may be best understood using such interpretation.

***Claim Rejections - 35 U.S.C. §103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 32-34 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Curtis, et al., U.S. Pat. No. 5,298,978 (29 Mar. 1994).

8. Referring to Claim 32, Curtis discloses a system for determining the volume of a vessel or container, in which the volume of the aliquot forms the basis of the calculation of the vessel volume (col. 2, ln. 33). Curtis discloses that the system comprises a reference solution and a sample solution, wherein the reference solution contains a chromophore copper sulfate, and the sample solution contains a red chromophore (col. 2, lns. 34-39). Curtis further discloses that the first chromophore has a maximum absorbance different from that of the second chromophore (col. 2., lns. 34-39). Curtis discloses that the each of the reference and sample solutions contain a known concentration of the chromophores (col. 3, lns. 21-23), thus allowing for a circumstance in which each has a different concentration, or the same concentration. Curtis does not explicitly disclose that the wells into which the pipette or vessel mixes the solution is measured to any particular accuracy. However, implicit in the reference is that the wells are manufactured to a tolerance suitable to eliminate at least one variable, or minimize such variable, such that the system can accurately determine the volume of the liquid. See MPEP §2144.01. Curtis also

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does not explicitly disclose that the wells into which the pipette or vessel mixes the solutions may be configured such that there are a plurality of sample solutions. However, such duplication of parts does not distinguish over the prior art. See MPEP §2144.04(VI)(B), citing, In re Harza, 274 F.2d 669, 124 USPQ 378 (CCPA 1960) (mere duplication of parts has no patentable significance unless a new and unexpected result is produced.). Accordingly, combination of features as claimed would have been obvious to those skilled in the art at the time of the invention.

9. Referring to Claim 33, Curtis discloses a system for determining the volume of a vessel or container, in which the volume of the aliquot forms the basis of the calculation of the vessel volume (col. 2, ln. 33). Curtis discloses that the system comprises a reference solution and a sample solution, wherein the reference solution contains a chromophore copper sulfate, and the sample solution contains a red chromophore (col. 2, lns. 34-39). Curtis further discloses that the first chromophore has a maximum absorbance different from that of the second chromophore (col. 2., lns. 34-39). Curtis discloses that in one preferred embodiment, the first chromophore has an absorbance peak maximum at 730 nm, while the second chromophore has an absorbance peak maximum at 520 nm (i.e. more than 100 nm different from each other). Curtis discloses that each of the reference and sample solutions contain a known concentration of the chromophores (col. 3, lns. 21-23), thus allowing for a circumstance in which each has a different concentration, or the same concentration. Curtis does not explicitly disclose that the wells into which the pipette or vessel mixes the solutions may be configured such that there are a plurality of sample solutions. However, such duplication of parts does not distinguish over the prior art. See MPEP §2144.04(VI)(B), citing, In re Harza, 274 F.2d 669, 124 USPQ 378 (CCPA 1960)

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(mere duplication of parts has no patentable significance unless a new and unexpected result is produced.). Accordingly, combination of features as claimed would have been obvious to those skilled in the art at the time of the invention.

10. Referring to Claim 34, the Curtis reference does not explicitly disclose the introduction of gas for expansion, or the presence of bubbles. However, allowing for the presence of bubbles which permit the expansion of samples in closed vessels has been well known in the art. See MPEP §2144.03.

11. Referring to Claim 36, Curtis discloses a system for determining the volume of a vessel or container, in which the volume of the aliquot forms the basis of the calculation of the vessel volume (col. 2, ln. 33). Curtis discloses that the system comprises a reference solution and a sample solution, wherein the reference solution contains a chromophore copper sulfate, and the sample solution contains a red chromophore (col. 2, lns. 34-39). Curtis further discloses that the first chromophore has a maximum absorbance different from that of the second chromophore (col. 2., lns. 34-39). Curtis discloses that the each of the reference and sample solutions contain a known concentration of the chromophores (col. 3, lns. 21-23), and thus is suggestive that each has a different concentration. Curtis discloses that the volume of the liquid is determined based on calculations based on the absorbances of the chromophores (Fig. 6, element 112), and that deviations from Beer's law are also calculated (Fig. 6, element 120). Curtis further discloses that the photometer readings may be non-linear (col. 10, ln. 12-15), although even in the absence of such explicit statement, the non-linearity is a property of the chromophores, rather than any particular feature of the invention. Curtis does not explicitly disclose that the calculations are based directly on the absorbance of the sample. However, it would have been obvious to those

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skilled in the art at the time of the invention, since the disclosure provides that the sample solution includes a chromophore component, the absorbance of which would be known.

Accordingly, the combination of elements would have been obvious to those skilled in the art at the time of the invention.

***Allowable Subject Matter***

12. Claims 1-20, 23-31, and 35 are allowable, since the prior art references, either considered alone or in combination, do not disclose or render obvious the limitations set forth therein.

13. Referring to Claim 1, the prior art references, either considered alone or in combination, do not disclose or render obvious the limitations whereby a system for calibrating a liquid volume includes providing a sample solution with first and second chromophores with a maximum absorbance peaks at least 100 nm apart, and a blank solution only the second chromophore in equal concentration, and determining the volume based on the absorbance measurements of the sample and blank solutions, in combination with the remaining limitations in the claim. Claims 2-20 are allowable based on their dependency upon the claim from which each is dependent. Referring to Claim 24, the prior art references, either considered alone or in combination, do not disclose or render obvious the limitations whereby the contact angle between the sample solution and the wall of the sample holder is between 80 and 100 degrees, in combination with the remaining limitations in the claim. Claims 25-30 are allowable based on their dependency upon the claim from which each is dependent. Referring to Claim 31, the prior art references, either considered alone or in combination, do not disclose or render obvious the



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limitations whereby a system for calibrating a liquid volume includes providing a sample solution with first and second chromophores with a maximum absorbance peaks at least 100 nm apart, and a blank solution only the second chromophore in equal concentration, and determining the volume based on the absorbance measurements of the sample and blank solutions, in combination with the remaining limitations in the claim. Referring to Claim 35, the prior art references, either considered alone or in combination, do not disclose or render obvious the limitations whereby a system for calibrating a liquid volume includes providing a sample solution with first and second chromophores with a maximum absorbance peaks at least 100 nm apart, and a blank solution only the second chromophore in equal concentration, and determining the volume based on the absorbance measurements of the sample and blank solutions, as well as the contact angle between the sample solution and the wall of the sample holder being between 80 and 100 degrees, in combination with the remaining limitations in the claim.

### ***Objections***

14. The Specification is objected to because it does not discuss element 60 in Figure 4, as required by 37 CFR 1.84(p)(5). The Examiner expects that element 60 is a representation of an air bubble near cap 58, wherein cuvettes 54 are disposed substantially horizontally in Figure 4. Such expectation is supported by the discussion of Figure 4 in the Specification at page 19, last full paragraph, to page 20, first paragraph. Appropriate correction of the Specification is required.

*Comments*

15. The following prior art reference is of interest: Halg, U.S. PG-Pub. No. 2002/0149772 (17 Oct. 2002). The Halg reference also discloses and claims determining a volume using chromophores, however, Claim 1 therein contains the additional limitation in which, "the liquid is stained by formation of a complex between ions comprising the chromophoric indicator and a specific ligand comprising the liquid sample". This limitation is distinguishable from the instant invention in which no complex is formed.

*CONCLUSION*

16. Applicant's Claims 21, 22, 32-34 and 36 are rejected based on the reasons set forth above.

17. Applicant's Claims 1-20, 23-31 and 35 are allowable based on the reasons set forth above.

18. Any inquiries concerning this communication from the Examiner should be directed to Vincent P. Barth, whose telephone number is 703-605-0750, and who may be ordinarily reached from 9:00 a.m. to 5:30 p.m., Monday through Friday. The fax number for the group before final actions is 703-872-9318.

19. If attempts to reach the Examiner prove unsuccessful, the Examiner's supervisor is Frank G. Font, who may be reached at 703-308-4881.

20. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1782.

  
Richard A. Rosenberger  
Primary Examiner